The area includes Acushnet, Dartmouth, Fairhaven, Lakeville, Marion, Mattapoisett, New Bedford, Rochester, and Wareham. The organization is charged with implementing programs to meet the education and training needs of low-income residents and the retraining of those permanently separated from their last job. The organization administers about $2 million in youth programs, $1 million for economically disadvantaged adults, and $1 million in retraining money for dislocated workers. Due to Federal cutbacks, the funds available to assist low-income adults have been cut in half in the last five years, yet it still represents by far the largest public sector program to support workforce education. Last year 365 economically disadvantaged adults and 600 dislocated workers participated in New Directions programs.

- ***New Directions is perceived by some in the business community to not pay adequate attention to job placement, although these criticisms appear to be tied to the legacy of past training initiatives.***

Although New Directions has worked to improve placement, build ties with the business community, and develop more individualized training programs, some still feel that New Directions is not adequately informed about job opportunities. However, the criticisms primarily describe old-style training programs abandoned years ago in which large classes of people were trained for particular occupations with little attention paid to job opportunities upon completion.

New Directions is forced to conduct more of its own training because it has difficulty locating training vendors in the city willing to provide government-funded training. The current system ties payment to successful placement of graduates. While appropriate in concept, the years of job losses in the community have made training vendors wary of sponsoring training programs in which their payment is contingent on finding job placement.

New Directions is working to build better linkages with the business community. While the Regional Employment Board, which offers policy oversight to New Directions programs, is one mechanism for incorporating the interests of the private sector, New Directions is currently seeking additional forums for building industry input into the training process.

New Directions is interested in doing on-site customized training but has yet to locate many opportunities. It had worked closely with Acushnet Rubber to design a training program that would have led to the creation of almost 200 new jobs, however, the company's contract that would have led to such expansion never materialized.

- ***Fairhaven is a minor blip on the screen for service deliverers focusing on New Bedford.***

Both in terms of residents and businesses, Fairhaven is overshadowed by the needs of its larger neighbor. Education and skill levels of Fairhaven residents tend to be higher than city residents and residents benefit from lower levels of unemployment levels. As a result, the magnitude of demand for services in New Bedford, measured both by the number of people requiring training and by the depth of their demonstrated need, tends to dwarf that of Fairhaven. The relatively small business community that lacks cohesion is also a relatively unnoticed entity from the standpoint of regional service providers.

Higher Education

In recent years, as global industrial competition has intensified, American industry and government have become increasingly concerned with questions of productivity, the capacity to innovate, and competitiveness. Many observers see improvements in the areas of product and process innovation as essential if American firms are to maintain and enhance their competitive position in the world economy. With knowledge-based industries such as computer hardware and software, artificial intelligence, and biotechnology playing an increasingly important role, it is not surprising that the American university and its physical and intellectual resources have taken center stage in strategies for improving productivity and long-term economic development.

Given the shift in the composition of the U.S. industrial base and the increased importance of education and technical expertise for industrial success, universities are being thrust into a more active role in economic development. The 1980s showed vividly the connection between higher education and economic development activity. There were no doubts that the high-tech corridors of Silicon Valley and Route 128 were connected to the nearby universities. Research shows that "the mere presence of a technical university contributes an important quality-of-life factor affecting an area's economic growth." Some technically-oriented firms will only locate in an area that has a technical college, especially one that offers night classes in engineering.

Institutions of higher education are an enormous resource to Fairhaven on a number of levels:

1. ***As educational institutions, they play their most fundamental role in educating and building the capacity of residents.*** Through their degree programs and continuing education programs, the colleges and universities that provide services to area businesses and residents are an important resource.

2. ***Institutions of higher education are important sources of new ideas, new products, and entrepreneurs.*** There are numerous examples of individuals affiliated with universities who have started their own successful companies. Universities generate spin-off enterprises by commercializing research started at the university.

3. ***Institutions of higher education provide important services to the public sector and to businesses in the region.*** Faculty and staff of the region's universities and colleges can provide specialized assistance to local communities and businesses.

4. ***Institutions of higher education add to the overall quality of life in the community.*** They provide cultural activities and other amenities that increase the attractiveness of the area as a place to live and to do business. The quality of life also attracts students to stay in the area. This base is important to the development of new economic opportunity.

5. ***Finally, institutions of higher education add to the region's economic base.*** Colleges provide an important source of employment in a community and, thus, generate income that circulates in the local economy.

➢ ***While there is no institution of higher education located in Fairhaven, residents and businesses of Fairhaven have access to a rich source of educational resources through Bristol Community College, Bridgewater State College, and the University of Massachusetts at Dartmouth.***

Bristol Community College (BCC)

Bristol Community College offers a broad range of educational programs as well as customized training and professional development opportunities to address the economic development needs of southeastern Massachusetts. Of the College's 40 associate degree program options, 27 are career programs intended to prepare students to enter the workplace with marketable skills in fields ranging from engineering and health to criminal justice and child care. The remaining programs are intended to provide either transfer or transfer/career options. The College also offers 19 certificate programs that prepare students for immediate employment and provide essential background for those interested in pursing a degree. Through its wide range of course offerings, BCC has become a major supplier of well-trained personnel for area business and industry. In addition, 40 percent of BCC students eventually transfer to both private and public baccalaureate institutions. The College's Center for Developmental Education provides hundreds of students each semester with tutoring, developmental, special needs, English as a Second Language, and other services.

- ***Division of Business and Information Technologies.*** Bristol Community College's Division of Business and Information Management actively works with regional chambers of commerce and economic development agencies to develop and implement local initiatives and specialized training programs. This resulted in the addition of seven new certificate programs in the past year. Included here is one of only six approved Lotus Notes programs in the U.S. To strengthen the technical components of the business programs, Novell technology was incorporated into the curriculum. The Business division also offers a Cooperative Education Program, which placed 157 students in academic year 1994/95 in a wide range of employment opportunities with both large and small companies. In its seventh year of operation, BCC's Cooperative Education students continue to be an important pool of trained and talented workers for area employers.

- ***Divisions of Engineering Technology.*** The College has recently upgraded and revamped several academic programs to reflect changes in local business technology needs. For example, Engineering Technology degree programs have been redesigned to include increased technical competencies to better meet the needs of local industries, and the Computer Information Systems degrees have been updated to better reflect local business needs for workers trained in PC-based technology and software.

  In addition, since 1987, BCC has been actively involved in developing partnerships with area public schools to support its Tech Prep 2+2 associate degree program. The

prime focus of this project has been to address the need for a rigorous and focused program of study for students currently enrolled in "general" courses in comprehensive high schools or in occupational and vocational technical courses that do not traditionally prepare high school students for post-secondary education. To date, 19 area high schools participate in the program that emphasizes the development of academic core courses at the high school level to ensure a logical progression to the community and eventually to the workplace. Tech Prep provides an important human resource development pool for area employers while increasing educational opportunities for disadvantaged, minority, and/or "at-risk" students.

- ***Division of Health Technologies.*** The Health Technologies division offers a broad array of associate degree and allied health certificate programs designed to meet the area's growing demand for well-trained health care providers. Traditional program offerings include nursing, clinical laboratory science, dental hygiene, emergency medical technician, and phlebotomy. In the past two years, BCC initiated associate degree programs in Healthcare Information and Occupational Therapy to respond to the growing needs of area health service organizations for trained employees with these specialized skills. Graduates of BCC's health-related programs are a continuing vital and dependable source of well-trained employees for area health care facilities.

- ***Center for Business and Industry.*** BCC's Center for Business and Industry has a well-established reputation among area employers seeking assistance in developing their workforce. Through its strong partnerships with area business and industry, the Center provides on-site consultation, needs analysis, curriculum development, program implementation, and evaluation services that result in customized on-site training opportunities. Current BCC training partnerships include Texas Instruments, Joan Fabrics, the Acushnet Company, Quaker Fabric, Keithley Metrabyte, Harodite Finishing Company, Child Care Works, Roma Color, Little People's College, and Kennedy Donovan Center School. Over the last four years, the Center has served over 50 companies and trained approximately 3,600 employees.

  In addition to its customized on-site training offerings, the Center offers a broad range of certificates, continuing education units (CEUs), non-credit courses, seminars, and other types of professional development opportunities geared towards individuals seeking new skills or upgrading current skills in order to remain competitive in the workplace. Current certificate offerings developed in response to present and emerging economic development needs include Medical Insurance Specialist, Legal Assistant, Zenger-Miller Supervision and Leadership, Travel and Tourism, Computer Applications, Novell Networking Specialist, AutoCAD, and Pharmacy Assistance. This past year, over 1,500 students enrolled in Center for Business and Industry training opportunities.

  BCC is a Novell Authorized Education Center (NEAC) and offers a Certified Novell Engineer Program utilizing the most current applications of 4.1 Netware. Over 200 students have completed the program and many have become Novell certified. The program was recently selected by the National Council on Community Services and

Continuing Education for its Exemplary Program Award.

- ***Adult Learning Center - Workplace Literacy Initiatives.*** In response to the low educational levels of many area employees and the prevalence of non-native English speakers in the workplace, BCC has developed innovative workplace literacy and ESL programs designed to strengthen the basic skills of current employees. In the last nine years, 3,000 workers from 45 companies have been served by BCC's workplace literacy programs. As part of this program, a computer assisted basic skills program has been offered in the Attleboro Industrial Park where Bristol Community College has brought five companies together to form a Workplace Education Collaborative. BCC assisted the Attleboro Collaborative in obtaining a $150,000 Federal Workplace Literacy Grant. This type of workplace literacy collaborative has proven to be an excellent model for replication with other area companies that are in need of providing workplace literacy services for their employees, but are too small to sponsor these services on their own.
- ***Division of Continuing Education and Community Services.*** Through this division, BCC offers extensive credit and non-credit courses throughout the year. Credit registrations average about 3,000 per semester and non-credit registration average about 700 per semester. The College's non-credit course offerings are continually assessed to reflect changes in local business, education, and special interest needs. These credit and non-credit course offerings are an important source of human resource development for area employers, a vital source of educational access and mobility for area residents, and a meaningful source of lifelong learning opportunities for individuals seeking self-improvement.

UMass Dartmouth

When asked about the University's role in economic development in the region, one of the UMass Dartmouth administrators interviewed for this report, responded "Everybody's still feeling their way around, but we're going in the right direction. The time is right and the culture is right."

The University had its origins in the textile industry in the late 1890s. The New Bedford Textile Institute and the Bradford Durfee Textile Institute set the stage for what ultimately became the University of Massachusetts Dartmouth. In the interim, the University was also known as the Southeastern Massachusetts Technological Institute, and then as Southeastern Massachusetts University. UMass Dartmouth is now one of five University of Massachusetts campuses; the others are UMass Lowell, UMass Boston, UMass Amherst, and UMass Medical Center.

There are five colleges within the University: Arts and Sciences; Business and Industry; Engineering; Visual and Performing Arts; and Nursing. The colleges that are most relevant to this report are Business and Industry, and Engineering.

The new chancellor of UMass Dartmouth is putting the building blocks in place to

significantly boost the University's leadership in the southeastern Massachusetts economy. Several recent initiatives are notable: a $10 million marine science laboratory, a new advanced technology center, a federally-funded manufacturing extension service, and the beginning of what will be a long-term educational and research relationship between the University and the Naval Undersea Warfare Center in Newport, Rhode Island.

- ***College of Business and Industry:*** The College of Business and Industry has played and will continue to play an increasingly important role in the University's effort to be a regional economic development engine. Following are examples of the kind of resources and activities in which the College is engaged:

  Center for Advanced Technology. The Center for Advanced Technology (CAT) is a new initiative that grows out the University's interest in consolidating under one roof programs and resources that are directed to area companies. The Center will be a bridge between engineering and the sciences and business. The focus will be on environmentally appropriate materials, advanced manufacturing processes, linkages with marine science and technology, training and industry conferences, business incubation and venture development, business services and outreach, and textiles.

  The program component of the Center is overseen by the College of Business and Industry and is under the direction of an engineer from the University of Notre Dame. He holds nearly 50 patents and has experience and expertise in fluid mechanics, heat and mass transfer, air pollution, applied mechanics, and meteorology.

  The intent of the program is to lay the foundation for the new facility and to begin to provide "one-stop shopping" for companies. Assistance will be available for any project from product conception to prototype development to marketing. Issues and opportunities related to the manufacturing process will also be a major priority. The Center is selecting its client base from the Governor's Choosing to Compete report and will, therefore, begin working with both large and small companies in the textiles, apparel, metalworking, and marine science and technology industries. Already the Center staff have met with over 100 area companies to discuss project ideas. From these meetings, more than 40 projects have been identified. Further outreach and publicity for the Center will go on over the next several months.

  The Center's program will have resources and assistance in three areas, and it will draw from a variety of existing disciplines in the University (some of these services are or will be available in the near-term, others will be "on-line" when the new facility is completed):

  - ***Information.*** The Center hopes to provide a comprehensive data bank for companies in the region, one that is comparable to what corporate giants like IBM would have. For example, the data bank could include the most up-to-date source of information on textile research that is occurring around the country.
  - ***Testing and Evaluation.*** Although the Center will not become a certified test lab, it could provide useful testing services to test, for example, textiles

for tensile strengths, or the Center could test and recommend to a manufacturer the least expensive but effective air scrubber to install to reduce the emission of toxic pollutants.

- ***Advanced Manufacturing.*** Rather than simply provide written reports and recommendations for manufacturing clients, the Center and its staff will offer hands-on consulting, where a company could see the actual development of a prototype product or process.

Department of Textile Sciences. The Department has its roots in the founding of what is now the University of Massachusetts Dartmouth. The University traces its origin to the New Bedford Textile School and the Bradford Textile School, both of which were founded in 1895. The Textile Sciences Department offers both undergraduate and graduate degree programs in textile technology and textile chemistry.

The Department is the only academic department of its kind in New England. In fact, it is one of six such programs around the country. It has 21,000 square feet of laboratory facilities where both basic and applied research occur. The equipment and machinery housed in the lab facilities allow for the conversion of yarn into various textile structures from wovens and knits into composites and specialty products. And several new pieces of equipment are being donated by area companies: a state-of-the-art fiber-to-yarn spinning system, a Jacquard loom, and a water-jet loom. Collectively, the equipment and machinery give the Department the ability to carry out a very broad range of applied research and testing.

Perhaps more than any other department in the University, the Textiles Sciences Department has developed a very close and productive working relationship with its industrial constituency. Industry hires many of the graduates of the program (typically as supervisors, testers, quality control specialists, industrial engineers, or as sales people), faculty interact formally and informally with industry owners and managers, companies often donate equipment or sponsor research projects, industry participates in the Textile Advisory Council (a group that has been in existence for over 20 years), and there are a number of vehicles in which industry can tap the resources of the Department.

Industry's interest and commitment to the Department were highlighted recently when the Department was slated to be closed a little over one year ago. Industry mounted a significant campaign to keep the Department in operation, and, in fact, succeeded.

The Department is striving to keep abreast with new developments in the industry. For example, the Department is involved with the UMass Lowell's Center for Environmentally Appropriate Materials. This initiative will attempt to develop less environmentally harmful materials. The intent is to prevent pollution and toxic wastes before destructive materials get to the disposal phase. This will mean, for textile, the development of new dyes and finishes.

The Department is also beginning to work in the composites area whereby fiber is reinforced with new, stronger substances (polymer materials, for example). The industry is finding new markets and niches with composites and it is imperative for companies to know what new materials will work effectively. The Department can be a valuable resource in this regard through its faculty and student research.

The Department is also slated to have a major role in the new Center for Advanced Technology (see above). When the new facility is built, textile research and facilities will play an important part.

Small Business Development Center. The dean of the College oversees the activities of the Small Business Development Center. As noted elsewhere in this report, the SBDC uses the expertise and experience of faculty in management, marketing, and accounting programs to provide applied research and technical assistance to area businesses.

- ***Mechanical Engineering Department.*** The Mechanical Engineering Department currently offers only undergraduate degrees, but is hoping for approval in the near future of a Master's program. The Department's 13 faculty members have expertise and experience in a number of areas that can be useful to companies in the New Bedford region: machine design, manufacturing engineering, solid mechanics, robotics, heat transfer, and materials science.

  Additionally, faculty have been active in the region and with the business community. For example, the Department was very involved in the University's effort to secure the ARPA grant that will create a manufacturing extension service.

  The Department has several laboratories that can provide area companies with technical assistance. The labs include:

  - computer-integrated manufacturing;
  - engine test facility;
  - materials science and metallurgy;
  - robotics and controls; and
  - computer-aided design.

- ***Electrical and Computer Engineering Department.*** The Computer Engineering component of the Department has a focus on the development, design, fabrication, and use of computer hardware and software. The curriculum includes courses in digital logic and design, microprocessors, computer architecture, and programming. Electrical engineering focuses on many specialties, including communication, electronics, power generation, microwave devices, and instrumentation controls.

  The Department offers a Master's degree and has preliminary approval for offering a doctorate. The Doctoral degree will increase both basic and applied research in the

future.

The Department has considerable resources in its laboratories. The labs include: signal processing, acoustic/optics, CAD, microwave, special purposes (e.g., robotics, controls, digital signal processing), and very large scale integration (VLSI).

The Department also has an Industrial Affiliates Program that serves as a link with private industry. Faculty have expertise to offer in the following areas: automated instrumentation, digital signal processing, image processing, optics research, software development, and VLSI design. Faculty consult frequently with companies in the southeastern Massachusetts region in these areas.

- ***Civil Engineering.*** The Civil Engineering Department engages in the planning, design, and construction of buildings, bridges, tunnels, highways, airports, waterways, and pollution control systems. Its faculty specialize in design of structures, transportation systems, and environmentally-related systems (e.g., water supply, solid and liquid waste disposal, and hazardous waste systems).

  The Department estimates that its faculty have worked on over 300 buildings in the southeastern Massachusetts region. Companies would typically expand their operation, build a new building, or add a new piece of equipment or machinery, and approach the Department for assistance. Faculty also have extensive experience in transportation, through the Massachusetts Department of Transportation's Bureau of Roads, and several are involved with work currently underway on the design and construction of an intersection on Route 6.

  Although its public profile is not as high as other departments or centers in the University, the Department is clearly moving in the direction outlined by the chancellor. That is, it will be active in economic development efforts, industry applications, and making its facilities more available to companies in the region (e.g., a private firm used the mechanics lab recently to test its equipment). Additionally, the Department has joined several other departments in the University in a cooperative agreement with the state's Executive Office of Environmental Affairs. The agreement, which will also include the University of Massachusetts Lowell, will have environmental clean-up and pollution prevention as priorities.

- ***Center for Policy Analysis.*** The Center was initiated in 1983 by faculty in several disciplines. The intent was to use the Center as a vehicle to more fully integrate the University with the southeastern Massachusetts region, and to make more of the University's research resources available to communities in the area.

  Five faculty researchers were appointed to the Center, principally from the Economic, Sociology, Political Science, and Computer Science departments. During the Center's first few years, a number of projects were undertaken:

  - a study of the marine electronics industry in the southeastern Massachusetts region;
  - a capital planning and management workshop series for the cities that make

up the so-called Southeastern Massachusetts Partnership -- Fall River, New Bedford, Attleboro, Taunton, and Brockton;

- a report that dealt with the reorganization of Fall River's city government; and
- a computerized tracking system of clients that had received training from New Bedford's Job Training Partnership Office.

In spite of these early efforts to be of service to the region, the Center closed in 1988 due in part to the lack of support from the University's administration. In 1992, through the initiative of a faculty member in the Political Science Department, the Center was reopened. Its first project was a study for the city of Fall River on the potential impact of increased sewer and water fees on businesses in the city.

A new director of the Center has also been recently hired. Under his leadership, the Center will continue to have a southeastern Massachusetts focus, but it will also broaden its scope to include national issues related to several topics:

- health care policy;
- national energy issues and policy;
- enhanced marketing of underutilized fish species;
- public finance;
- environmental regulation; and
- marine protection and policy.

The Center will be pursuing state grants to carry out some of its work. It is also very eager to work with regional communities and businesses in the areas outlined above.

Bridgewater State College

Bridgewater offers students a choice of more than 100 undergraduate and graduate programs, including fields such as management science, aviation science, communication, teacher education, computer science, art, music, social work, psychology, and the biological, physical, and chemical sciences.

Bridgewater plays an important role in the economy of southeastern Massachusetts. The president has worked closely with area legislators on economic development throughout her tenure at Bridgewater. As a consequence, Bridgewater is the home to the "Southeastern Massachusetts Legislative Caucus," an organization headed by a state senator and state representative. The Caucus was founded to support and advance the region's economic growth. It has sponsored several conferences on economic development and arranged millions of dollars in financing for area businesses.

Among the college's resources most directly involved in regional economic development are the following:

- ***John Joseph Moakley Center for Technological Applications.*** Bridgewater has become a national leader in technology with the opening in the fall of 1995 of the "John Joseph Moakley Center for Technological Applications," one of the most advanced computing and telecommunication facilities in the country. The Center is funded by a $10 million federal grant, the largest federal grant ever awarded to any state college in America. It serves as the hub of a computing network that links students, faculty, and staff in all academic buildings and student residence halls with the Internet and World Wide Web.

  Economic development is a prime focus of the Moakley Center. A newly-formed Business Advisory Council with representation from the region works with college leadership to help plan programs for companies and organizations interested in technology for employee training and product development. Two computer laboratories in the Moakley Center are reserved for use by companies that desire access to sophisticated technology resources in order to make their businesses grow. Those selected have up to a year to test their products using these facilities. And, a state-of-the-art television studio and satellite facilities gives businesses in the region access to first-rate teleconferencing resources.

  The Moakley Center is also in a strong position to influence new educational initiatives that employ technology. The Center will be helping to improve teaching and learning in grades K through higher education. New approaches to education that involve technology are being tested by faculty and students.

- ***Earth Sciences and Geography Department.*** Faculty in this department provide assistance to businesses and communities in several areas. For example, faculty specialists in "Geographical Information Systems" (GIS) are working with a number of businesses on land-use mapping for parcels that have development potential. The digitally-drawn maps are more accurate and comprehensive than earlier models. Faculty are also working with businesses and communities in the southeastern Massachusetts area on surface and groundwater supply and contamination prevention.

- ***Department of Economics.*** Faculty expertise in this department centers on issues related to the workforce, including labor supply and skills base. Faculty can also offer assistance to communities that are looking at transportation costs and new transportation systems.

- ***Department of Management Science.*** A broad range of accounting, marketing, advertising, sales, entrepreneurship, and small business development expertise exists among the faculty in this department. For more than a decade, faculty and students have worked directly with large and small companies and organizations throughout the region and provided assistance in these areas.

Financing

The availability of appropriate sources of business financing is critical to sustaining the economy of Fairhaven and the greater New Bedford region. Capital is an essential ingredient in every phase of the development of a business enterprise, from startup to expansion to maturity. While many other ingredients must be present for a firm to succeed, a promising business may stagnate, fail, or never even start if it does not have access to the right types of capital in the right amounts. Thus, Fairhaven must be concerned about the ability of its businesses to access the financing that they need. This section reviews findings related to the financial resource base in the region.

➢ ***The New Bedford regional banking market is a moderately competitive banking market. Many banks operate in the area and there is a mix of regional and local banks. However, a number of the banks that are active in the area are savings banks that have not traditionally been active commercial lenders.***

Despite the consolidation that has occurred in the banking industry in recent years, the community is still served by a mix of banking institutions, including locally-owned and large "super-regional" institutions. There are 13 commercial banks and savings institutions with offices operating in the New Bedford market. Deposits in the 53 branches totaled just over $2 billion in 1994.

The community's deposit base is somewhat concentrated in a few institutions. Three institutions -- Fleet Financial Group, Compass Bank for Savings (part of the 1855 Bancorp headquartered in New Bedford), and Citizens Bank (part of the Royal Bank of Scotland) -- control about 70 percent of local banking deposits.

The banks operating in the New Bedford region are somewhat diverse in size and ownership. The banks fall into three general categories.

- ***The first category is the large regional banks.*** These include Fleet, Bank of Boston, Citizens Bank (owned by the Royal Bank of Scotland), and Baybank. The proposed merger between Bank of Boston and Baybank will further reduce the number of larger banks operating in the region.
- ***The second category is smaller and medium-sized banks*** operating primarily within Massachusetts such as the Compass Bank for Savings.
- ***The third category is locally-based community banks.*** These include Luzo Community Bank (owned by New Bedford Community Bancorp), the National Bank of Fairhaven, Plymouth Savings Bank, Sandwich Co-op Bank, Mayflower Co-op Bank, and Rockland Trust Co.

The diversity of banking organizations operating in New Bedford affords borrowers a number of options in seeking credit. Different types of banks typically fill different market niches in terms of size and types of borrowers. Differences in market focus, lending procedures, and "banking culture" provide more opportunities for borrowers to find banks that mesh with their

particular characteristics.

➢ ***Small businesses in Fairhaven have access to a relatively diverse set of banks including the National Bank of Fairhaven which remains headquartered in the Town and is focused on the small business market.***

Within the Town of Fairhaven are the following:

- ***Baybank*** -- one branch with $8 million in deposits;
- ***Citizens Bank of Massachusetts*** -- one branch with $104 million in deposits;
- ***Compass Bank for Savings*** -- one branch with $47 million in deposits;
- ***The National Bank of Fairhaven*** with $44 million in deposits; and
- ***Fleet (New Bedford Institution for Savings)*** -- two branches and $62 million in deposits.

A recent analysis of small business lending by commercial banks completed by the SBA found that two banks operating in the Fairhaven region are ranked as amongst the most "small business friendly" banks in the Commonwealth. Based upon SBA's aggregate measures, the National Bank of Fairhaven ranked fifth in the state and Luzo Community Bank ranked sixth. This provides some evidence that local small businesses have access to local banks that are trying to fill the small business niche.

➢ ***As in other parts of New England, capital availability had been severely constrained during the early part of the decade by economic decline and the strains experienced by the regional banking system.***

The New England region's severe recession, compounded by over-aggressive real estate lending by the banking industry and precipitous declines in real estate values, caused banks to experience heavy financial losses during 1989 to 1991 and to limit new lending. Not only did businesses find it more difficult to obtain additional credit, but some otherwise sound businesses had existing credit cut back or eliminated.

New Bedford did not escape these difficulties. Bank failures resulted in cutbacks or complete cutoff of financing for some area firms. Some other banks experienced significant loan losses, and were forced to cut back on lending activity. The regulatory response to banking industry problems further reduced the availability of new credit.

➢ ***The regional banking market has experienced and will continue to experience substantial institutional restructuring.***

In part as a result of bank failures, and in part because of the longer-term trend toward banking consolidation, a number of banks in the region have experienced ownership changes during the past decade. Such ownership changes can lead to short-term disruptions in lending activities and long-term shifts in lending polices and procedures. Banking consolidation within the

state of Massachusetts during the 1970s and 1980s was followed starting in the late 1980s by regional consolidations such as the Bank of New England/Connecticut Bank and Trust and Shawmut/Connecticut National Bank mergers, and later by such regulatory assisted mergers as Fleet/Bank of New England. Consolidations continue to occur with the recent acquisition of New Bedford Institution for Saving by Fleet.

Such structural changes can be disruptive to credit relations. As new management takes over, there may be cutbacks in lending as management seeks to become familiar with the local banking market. In some cases, new management is accompanied by changes in the industry or size mix of the loan portfolio. In addition, lending procedures and the focus of loan decisions may change.

➢ ***There is evidence that the banking environment has recently begun to improve.***

The major regional banks have resolved their troubled portfolios and have returned to profitability. Some of these banks appear to be prepared to lend more aggressively to smaller firms. Banks are now highly liquid and need to move their assets from low-yielding federal securities into higher-yielding loan products.

Bankers do indicate that lending is unlikely to return to the aggressiveness of the 1980s, but they feel this is good because underwriting standards during that period were too lax. Bankers do not generally feel that regulatory pressures were causing them to reject sound borrowers. Development finance professionals and others who provide small business assistance indicate that credit standards, while not as liberal as in the mid- and late-1980s, are reasonable and that banks are actively seeking to make business loans.

➢ ***Private sources of business financing have increasingly been supplemented by public and quasi-public sources of "development finance" at the federal, state, and regional levels.***

Businesses in Fairhaven have access to a wide range of federal, state and regional resources designed to address financing gaps. The following federal, state, and local financing programs are available to Fairhaven firms.

- ***Secured debt financing:*** In addition to federal loan guarantees through the SBA, the following state programs and quasi-public institutions provided businesses with assistance in accessing secured debt. Through Massachusetts Industrial Finance Agency (MIFA) Industrial Revenue bonds, Massachusetts Government Land Bank industrial real estate financing, and the new Capital Access Program.
- ***Equity or high-risk debt financing:*** Through the Massachusetts Technology Development Corporation, the Massachusetts Capital Resource Company, and the Land Bank's New Emerging Technology Fund.
- ***Targeted financing:*** Through the Massachusetts Community Development Finance Corporation (minority- and community-based ventures), the Massachusetts Government Land Bank (reuse of surplus government properties), and the Massachusetts Industrial Services Program (defense conversion and

general restructuring).

- ***Micro-enterprise*** - SEED program.

➢ ***Availability of financing does not appear to be of serious concern to the general business community.***

Among firms responding to the Mt. Auburn business survey, about 23 percent were negative about the availability of bank loans and risk capital in the Fairhaven region, while 31 percent were positive. When asked whether they had any financing needs that were going unmet, only three out of 35 respondents (or about 10 percent) responded yes.

➢ ***Barriers exist for certain types of firms, particularly very small firms and firms owned by recent immigrants.***

Smaller firms have difficulty obtaining small amounts of financing -- under $25,000, and particularly under $10,000, because commercial loans of less than these amounts are not cost-efficient for most banks. In addition, business owners who are recent immigrants do not have experience obtaining capital from the formal financial sector and are often reluctant to approach banks.

➢ ***Risk capital is available to firms meeting the criteria of the venture capital industry, but is in short supply to firms needing small amounts of risk capital.***

Bankers and development finance professionals indicate that there is, in fact, a limited amount of venture capital activity in the region from Boston- and Providence-based venture firms. This activity, given the investment preferences of venture capitalists, is likely to focus on very high-growth, technology-oriented companies needing at least $500,000 in financing. Firms needing smaller amounts of financing have very limited access to risk capital.

Development Capacity

The institutional capacity of the New Bedford area to undertake economic development activity is a critical resource in efforts to promote the region's economic growth. Communities around the U.S. have built up effective development organizations whose mission is to assist in the economic development process. These organizations have taken many different forms. At the ***municipal level***, cities and towns have established redevelopment authorities, economic development commissions, local development corporations, and community development corporations. At the ***regional level***, there has been a growing involvement of the private sector in economic development through chambers of commerce and other regional public/private partnerships. Finally, throughout the U.S., the past decade has been one of incredible innovation at the ***state level*** in terms of the development of new economic development institutions and programs. The following sections discuss the array of organizations and resources for economic development available in the New Bedford region.

➢ ***Fairhaven has had very limited planning and economic development capacity.***

The Town of Fairhaven has very limited staff capacity, particularly in the areas of community development and economic development. Essentially, the Executive Secretary has been responsible for this task along with his many others. In addition, unlike many other towns, there is no formal, volunteer Economic Development Committee or Commission. As a result, the Town has no economic development strategy and industrial and commercial development has occurred in a relatively haphazard way. The Town does not have a designated industrial park or even an area that is industrial. The lack of staff capacity has also affected the ability of the Town to access community development funding through EOCD. It is competing in the process with numerous communities that have full-time community development or economic development staff.

➢ ***Fairhaven is perceived as a town that is open to industrial development.***

While it is not actively marketing an industrial park or any specific industrial sites, Fairhaven does have a reputation as a town that would like to see more industrial development. Unlike many other communities that are perceived by the business community as being opposed to any type of new development, particularly industrial, residents of Fairhaven are open to pursuing a wide range of strategies that could lead to new jobs and a better tax base.

➢ ***Businesses in Fairhaven are not familiar with the full range of state and regional resources designed to assist business.***

The survey of businesses located in Fairhaven provides evidence that many of the companies are not familiar with the numerous state and regional resources that have been designed to assist businesses on a variety of issues.

➢ ***The New Bedford region has a history of fragmentation in regards to economic development and has not come together around a strategic vision for the region's future.***

The New Bedford region has a very large number of organizations that are involved in some way in economic development. These include:

- ***The New Bedford Industrial Foundation*** -- The New Bedford Industrial Foundation (NBIF) is a nonprofit organization that supports industrial development in the greater New Bedford region. Its major activity has been the development and marketing of the New Bedford Industrial Park, which is located in New Bedford and Dartmouth. The NBIF's mission and its regional orientation make it a strong potential partner with Fairhaven for industrial development activities. Through its past development activities, the Foundation has financial resources that could be used for economic development in the region.
- ***New Bedford Corporation*** -- The New Bedford Corporation is a quasi-public organization that is essentially responsible for the economic development activities

of the city of New Bedford.

- ***CEO Club*** -- The CEO Club is an informal organization composed of executives from the business community in the New Bedford region. The Club has been involved in promoting and advocating for the business community in the public arena.

- ***The New Bedford Area Chamber of Commerce*** -- In addition to more traditional Chamber of Commerce activities, the New Bedford Area Chamber has on staff a Director of Economic Development whose position is funded by the Industrial Foundation. The economic development staff of the Chamber works on a wide range of economic development issues with other city and regional organizations. The Chamber has an Economic Development Committee that oversees the work related to economic development.

- ***Save Our Regional Economy (SORE)*** -- SORE is an organization of executives of local businesses that was established to address the high cost of electricity in the region. While its focus is on lowering electric rates, it has been involved in other issues related to the cost of doing business.

- ***Agenda For Jobs Partnership*** -- The Agenda for Jobs Partnership is a city/business partnership launched in 1992 by the Mayor of New Bedford. It is an informal organization that provides a forum for addressing and prioritizing economic development issues in the region. Included in the Partnership is the Mayor, the City Council President, the Chairman of the Industrial Foundation, the Chairman of the Chamber of Commerce, a representative from the CEO club, Minority Community and Education, and the Media. The six priority areas are lowering the cost of doing business, identifying space of future business expansion, developing international trade, developing tourism, identifying markets of the future, and developing workforce potential. In recent months, the priority issue for the Agenda has been the expansion of the airport.

- ***Southeastern Regional Planning and Economic Development District (SRPEDD)*** -- SRPEDD was established in 1968 to provide regional planning services to the communities of southeastern Massachusetts. The organization is certified as a planning district by the U.S. EDA, thus providing member communities with more favorable access to U.S. EDA Public Works funds. One of the important objectives of SRPEDD is to promote regional cooperation among the cities and towns within the region. The organization is involved in a wide range of activities relevant to economic development including: developing an overall economic development plan for the region; operating a data center that provides comprehensive data on the communities of the region; providing economic development training to local officials; undertaking special planning studies on transportation, land use, and environmental issues of relevance to the region; and undertaking transportation planning.

- ***South Eastern Economic Development Corporation (SEED)*** -- SEED makes loans to small businesses for expansion. It was established in 1982 to fill financing

gaps experienced by small businesses in southeastern Massachusetts. SEED, headquartered in Taunton, covers a large geographic area that includes Bristol, Plymouth, Barnstable, Dukes, and Nantucket counties. The organization has over 200 members. It is managed by a 30-member board of directors. The organization operated six financing programs. It was certified by the U.S. Small Business Administration to make loans under its 504 program. And, in 1984, the financing activities of the organization were expanded through the establishment of a Revolving Loan Fund that was funded by the U.S. EDA and the Massachusetts Executive Office of Communities and Development. SEED also operates a Human Capital Loan Fund that provides loans to small business undertaking employee training. Finally, SEED has recently established two new funds. Its Micro Loan Program provides up to $25,000 in flexible financing for small business and its Enterprise Fund provides loans of up to $100,000. One small business from Fairhaven, Bud's Flowers, has participated in the Micro Loan Program and three Fairhaven companies have received financing through the RLF.

- ***Southeastern Massachusetts Partnership*** -- The Partnership was formed in 1988 to promote and respond to the needs and interests of the five major municipalities in the southeastern Massachusetts area. The Partnership was organized as a private, nonprofit corporation. It is now overseen by a six-member board of directors: the mayors of Attleboro, Fall River, New Bedford, and Taunton, as well as the president of Bridgewater State College and the chancellor of the University of Massachusetts Dartmouth. The Partnership essentially provides a means by which economic development efforts can be coordinated and strategically targeted for the benefit of the region. The Partnership has several projects that were handed over to other institutions and organizations in the region.

- ***The Southeastern Massachusetts Industrial Partnership (SMMP)*** -- SMMP is one of five regional programs in Massachusetts designed to enhance the competitiveness of the state's industrial base. The program is funded largely through the U.S. Department of Commerce's National Institute of Standards and Technology. The program in Massachusetts is administrated by the Bay State Skills Corporation. SMMP targets small- and medium-sized manufacturing firms in Bristol, Plymouth, Barnstable, Dukes, and Nantucket counties. Project managers work with firms to assess needs, identify problems and opportunities, and then develop a comprehensive plan to help participating companies. Services include: quality management, ISO 9000 certification, materials management, plant layout, waste reduction, defense conversion, and market development.

- ***Entrepreneurial Training of Southeastern Massachusetts*** -- The ET program is an initiative of the Southeastern Massachusetts Manufacturing Partnership. The program offers training to dislocated workers on how to start and operate a business. Classes are held in nine-week cycles and they include instruction and practical exercise in the fundamentals of owning a business. At the end of the session, students have completed a comprehensive business plan designed to take a

business idea and make it operational. The program started in 1992 and seven training cycles have been competed. To date, 218 students have participated in the training. Of these, 136 have started a business.

➢ ***Fairhaven has an Executive Secretary to the Board of Selectmen who is well-respected by everyone in the region.***

In a region in which local communities are used to competing rather than cooperating, and with a wide array of interest groups, no leader has emerged who is able to bring the full range of actors together around regional economic issues. However, within this environment, the Executive Secretary of Fairhaven has emerged as an individual who is respected both by the business community and by other municipal officials. This credibility will be important in moving ahead on regional issues.

Infrastructure And Land Use

This section provides an overview assessment of the regional transportation and utilities network, and of land resources in Fairhaven with a view to highlighting current and potential future problems in the system that are barriers to continued economic development. It is not intended to cover every infrastructure need of the Town. The purpose is to analyze how well Fairhaven's infrastructure and land resources position the Town for industrial expansion and to assess potential opportunities for industrial development.

This analysis was based upon the following sources:

1. *interviewing Town officials and utility companies concerning current infrastructure and planned upgrades;*
2. *interviewing knowledgeable real estate and economic development professionals to gain their understanding and assessment of Fairhaven's strengths and weaknesses, overall industrial demand, and potential opportunities for Fairhaven;*
3. *reviewing Fairhaven's land inventory and visiting industrial sites;*
4. *collecting data on the supply of and demand for industrial real estate in the region to better assess the market realities Fairhaven will face;* and
5. *interviewing industrial developers and land owners to gain information on their experience and plans.*

➢ ***Fairhaven's regional industrial activity is largely driven by manufacturing in New Bedford and Fall River with expanding or relocating New Bedford-based firms the major users of new industrial space in the New Bedford-Dartmouth-Fairhaven market.***

While Fairhaven's has many unique assets, its industrial development potential is strongly tied to the regional economy. The growth of industrial firms in the region generates the demand

for industrial real estate that Fairhaven seeks to address. This is particularly true for Fairhaven since its industrial base is small and centered around boat repair and a few employers. Furthermore, any new manufacturers that locates in Fairhaven from outside the region will be drawn by the quality of regional resources and business costs.

Regional industrial activity is largely driven by manufacturing in New Bedford and Fall River and supported by the regional infrastructure system. While the regional industrial outlook is poor -- New Bedford, Fall River, and the region have experienced large losses of manufacturing jobs and face a major restructuring of the seafood industry -- there are several positive trends and factors:

- firms that survived the recent recession are seeing growth;
- the region did not suffer from the extensive overbuilding of real estate (like that of the Boston metropolitan market) and much of the bank-owned real estate has been absorbed;
- industrial construction and acquisition activity has increased in the last two years; and
- important upgrades to the regional infrastructure network are planned.

➢ ***Fairhaven has a good infrastructure platform to support industrial development, especially in terms of water service, sewer service, and transportation access. No serious deficiencies exist.***

- The ***highway transportation network*** is good. Interstate-195 provides good access to the major interstate highways serving southern New England and New York, and via Route 24 to Boston. Access to I-195 from the main industrial areas is very good through Route 240. The one serious transportation problem -- the closing of the Route 6 bridge to New Bedford, which impairs transportation between Fairhaven and New Bedford -- is currently being addressed with reopening of the bridge scheduled for January.
- ***Water Supply.*** Fairhaven has five wells with two million gallons per day capacity. Town usage is currently 1.4 million gallons per day so there is ample supply for increased industrial usage. Furthermore, the Town's agreement to purchase additional water from New Bedford provides further capacity and an emergency back-up capability.
- ***Sewer and Solid Waste.*** Fairhaven's waste processing is particularly advantageous. With a wastewater treatment plant that has 5 million gallon per day capacity and current waste processing of 2.4 million gallons per day, there is ample capacity for new industry along with commercial and residential growth. While sewers serve the vast majority of existing industrially zoned land, Fairhaven may need to extend water and sewer lines to open up new sites for future industrial development. With its own landfill, Fairhaven has greater capacity to handle solid waste than surrounding communities and may thus offer lower business costs in

this area.

- ***Telecommunications Services.*** Advanced telecommunications services are available to Fairhaven businesses. ISDN service is available subject to a site-by-site confirmation by NYNEX. Specialized equipment is needed to access this service; NYNEX will work with firms to ensure they acquire and install the proper equipment. NYNEX also provides cellular phone services and video-teleconferencing services that cover Fairhaven.

➢ ***Fairhaven's, as well as the whole region's, main disadvantages are the high cost of electricity and the lack of freight rail service that precludes Fairhaven from serving some firms and sectors. The expected deregulation of the electric utility industry provides an important opportunity for Fairhaven and the region to lower its cost structure.***

Since Fairhaven lacks freight rail service, it is clearly not a suitable location for industries and firms that rely on direct rail service. While this reduces the potential industrial firms that can locate in Fairhaven, it is not a major disadvantage. Most industrial locations lack direct rail service and most firms rely on truck transportation

- ***Utility Services.*** Fairhaven offers natural gas through Comgas, electric service through Comelectric, and telecommunications service through NYNEX. As previously mentioned, Comelectric's rates are among the highest in New England and are a competitive disadvantage. Comelectric does offer an economic development rate that reduces electric rates for new investments or expansions and a lower rate for reuse of vacant buildings. The economic development rate reduction is quite substantial, beginning at 58 percent and rising to the full rate over seven years. A 25 percent rate reduction applies to reuse of vacant buildings. The availability of these rate discounts should be widely advertised to new and expanding firms.

➢ ***The future of two major regional infrastructure assets -- the New Bedford Airport and the Seaport -- will have a significant impact on the region and influence industrial development opportunities.***

New Bedford is currently working to expand its runway to handle more air freight and passenger service and is seeking to attract a major air freight operator in conjunction with the airport expansion. The Federal Aviation Administration is supportive of the expansion and has provided a $250,000 grant for planning purposes. An environmental impact report is underway and should be completed in six to nine months. Full airport expansion is expected to take five years or longer. However, with the likelihood of strong environmental opposition and multiple airport expansions under consideration in eastern Massachusetts, approval is not assured. Furthermore, the long timeframe to complete an airport expansion makes it a consideration for long-term, rather than short- or medium-term strategies.

Many observers believe an expanded New Bedford airport can attract traffic from Boston's Logan Airport and Green Airport in Providence. While an active airport will certainly

increase the attractiveness of the New Bedford region for employers and residents, its greatest impact is likely to be the potential for expanding warehouse and distribution activities. The importance of multi-modal distributions systems is growing and firms are increasingly seeking sites that offer combinations of truck, rail, airport, and seaport infrastructure.

With a large sea cargo terminal and an interstate highway system in close proximity and without congestion problems (and the possibility of expanded air freight), the New Bedford region may offer an advantage to attract some new employers to the region (as well as offer advantages to existing firms). No analysis has been undertaken to identify the industries and firms for which the region's seaport-highway infrastructure capabilities are a major location factor. Fairhaven may want to work with regional organizations to complete this type of targeting study, assess its implications for industrial land needs in Fairhaven, and implement a regional targeted marketing effort. If and when the New Bedford Airport receives the required regulatory approvals, this marketing strategy could be expanded to encompass additional sectors that are reliant on the air cargo.

While the current lack of high quality distribution space in the region may hamper efforts to attract such firms, it may provide an opportunity for Fairhaven to pursue and to target for its industrial development efforts. Fairhaven is well located for such a role with some land that it could develop for this use. While distribution activities are not labor intensive, they do provide well paying jobs and may provide a hedge against additional shrinkage of the manufacturing sector.

➢ ***Fairhaven has a number of potential sites that could be developed for industrial and distribution uses. The Alden Road area is the Town's best industrial area and should be the focus of any short- to medium-term industrial development efforts. The Mill Road area has good potential for future industrial development and Fairhaven should consider focusing expansion of its industrial land resource on this area. Finally, the vacant AT&T site offers development potential.***

Fairhaven has five industrially zoned areas:

- the Atlas tack site and surrounding area;
- the Alden road area;
- the waterfront area between South Street and Route 6;
- the Howland Road industrial area in north Fairhaven; and
- the AT&T site between Route 140 and Mill Road.

All these areas are fairly well developed and offer smaller in-fill land sites for new industrial users. For a number of reasons, the Alden Road area and the AT&T-site area represent the best opportunities for new industrial development.

Due to hazardous waste contamination and limited road access, the Atlas Tack area is not suitable for industrial reuse. The waterfront and Howland Road areas also have limited potential for new industrial development. Access to I-195 from both these areas is more difficult than the

areas adjacent to Route 240 and requires traffic through residential areas. Few undeveloped sites exist in the waterfront area. The remaining sites in this area have unique infrastructure and water access that are most valuable in supporting firms in marine industries that require this infrastructure. Consequently, the future of this area is best considered in the context of Fairhaven's ship repair industry which is discussed elsewhere in the report. The Howland Road area has more land available and larger sites, but still has inferior transportation access. This area may be attractive to firms seeking proximity to downtown New Bedford but that cannot or do not want to be in New Bedford.

With excellent access to I-195, larger sites, more land, and full infrastructure, the Alden Road site is the best industrially-zoned land in Fairhaven for future development. These sites include 10 acres of subdivided land in the Pequod Road industrial area, 17 acres on Alden Road, and 17 acres on Bridge Street. However, the multiple land owners and a mix of appearances and abutting uses make future development more challenging. Coordinated marketing and selling is hampered by multiple land owners. Furthermore, the mix of retail, industrial, and residential uses in the surrounding areas may discourage some industrial firms that seek a traditional industrial park location. While these are important obstacles, they are not insurmountable and the Alden Road area is the Town's best market ready industrial area. Consequently, it must be the focus of any short- to medium-term industrial development efforts.

The Mill Road area has good unrealized potential for future industrial development and Fairhaven should consider focusing expansion of its industrial land resource on this area. This area has excellent access to I-195 via Route 240. It is well isolated from other commercial and residential uses, is surrounded by considerable undeveloped land, and is an attractive, high quality area with the Titleist and AT&T facilities. These existing developments could provide the foundation for a new, higher quality industrial area that serves industrial and distribution users seeking an attractive environment and attracted by the excellent access to I-195. Future industrial development of this area would require two important steps: (1) rezoning the 31-acre site adjacent to the AT&T building from rural residential to industrial use; and (2) extending water and sewer service to the site. Given the site's relatively small size, it may be hard to incur these infrastructure costs without an identified user for a significant portion of the site as well as grant assistance from state or federal sources.

- ***AT&T building.*** Fairhaven's largest vacant building and a prime location is the AT&T building. The building contains 305,000 square feet, including 65,000 square feet of office space and 240,000 square feet of specialized data processing space (80,000 on each of three floors), apparently built to support large mainframe computing systems that required precise temperature and humidity control. The building also contains a powerful back-up power generation system. Several obstacles make reuse difficult. The building's specialized use and configuration make it expensive to sub-divide and lend itself to a single user. However, there are few firms that need this size building and such users are extremely unlikely to be located in the region. Second, the building's operating costs are reputed to be very high due to high ceilings, extensive HVAC systems, and other factors. These costs make the AT&T building non-competitive for reuse, except to a user that absolutely requires the building's special characteristics. Third, with the rapid pace

of change in computer and telecommunications technology, the building is probably no longer "state-of-the-art," making its high operating costs even more problematic.

Due to these factors, most observers believe the best opportunity for reuse is to attract a large firm seeking a major data processing operation such as a mutual fund company, bank, or insurance company. While a large financial services company seems to fit the building's best use, current consolidation in this industry makes this potential reuse far less likely. As banks and insurance companies merge, they are faced with redundant back office operations. Thus, instead of seeking additional processing operations, they may be adding to the supply of such buildings as they close redundant operations. Major data processing users outside the financial services industry may still offer some potential.

It is possible that reuse may require subdivision of the building into a multi-tenant multi-use facility. To achieve this end, both the substantial operating costs and subdivision costs will need to be addressed. One multi-use concept has been developed by the Chancellor's offices at UMass/Dartmouth. The Chancellor's concept is a mixed use development that includes an education center housing some of the university's programs, a conference center, and a business incubator. This type of project would greatly benefit Fairhaven by reusing the building, establishing a university presence in the town, providing a high quality service, and providing space for new business. While the cost of this project makes its prospects difficult, Fairhaven should work closely with UMass to the extent it is still interested in implementing this project. If AT&T is unable to sell the building, then it may be willing to donate the building or sell (or lease) the facility at a greatly reduced price to eliminate its carrying costs.

➢ ***Regional Industrial real estate activity has increased in the last two years accounting for the acquisition and construction of over 400,000 square feet of industrial building space.***

While Fairhaven has approximately 70 acres of industrial land for new development, its future use and potential will be influenced by the regional real estate market. Table 1 summarizes new absorption and construction of industrial and warehouse space in Fairhaven and surrounding communities. Although this is not a comprehensive listing, it does provide a good picture of the current demand for industrial real estate in the region. With 417,000 square feet of industrial space acquired or built over the last two years, there clearly are expanding firms that need additional space. Assuming a floor to area ratio of .50 to .25, this level of activity can support 20 to 40 acres of land development. The source of the demand is, with the exception of the Titleist company, small firms within the region. Conversations with several developers and brokers confirmed this fact and emphasized that expanding or relocating New Bedford-based firms are the major users of new industrial space.

It is worth noting that while firms built or bought over 400,000 square feet, they acquired existing vacant buildings or added to existing buildings rather than construct new buildings. Consequently, new industrial land development occurred during this period. Businesses'

reluctance to incur the cost of new development and an inventory of good quality, reusable buildings most likely accounts for this situation. New land development will continue to be constrained as long as an inventory of good quality buildings remains. Most brokers indicated this supply is now scare, although future business consolidations or closures could add more inventory.

Real estate brokers also indicated that Fairhaven is eclipsed by Dartmouth as a potential location for expanding firms or firms needing to relocate from New Bedford. Dartmouth's abundance of land resources, the presence of UMass, and its partnership with New Bedford in developing the New Bedford Industrial Park all contribute to this perception.

Data from the Massachusetts Office of Economic Development (MOBD) and the Mass. Alliance for Economic Development (MAED) verify the modest demand for industrial space and the reliance on local firms to generate this demand. From FY 1993 through the first half of FY 1995, MOBD's southeastern regional office assisted in 23 industrial expansion, relocation, or retention projects. The vast majority were in the Northern Tier of the region encompassing Franklin, Mansfield, Taunton, and other communities. Three firms in the region were assisted by MOBD (two in Fall River and one in New Bedford), accounting for 28,000 square feet of new facilities.

Seafood and fish processing firms clearly stand out as an industry seeking new or expanded facilities in the region; fish processing is among the most frequent business type to conduct a site search in the area. This data confirms the continued importance of this industry to the region and its potential as a target sector for industrial development in Fairhaven.

While the region is experiencing a modest rebound in the demand for industrial space, there still exists a considerable inventory of industrial land. Over 400 acres exist in five industrial parks serving the region with the bulk of it, approximately 250 acres, located in the New Bedford Industrial Park on the Dartmouth side. (See Table 2.) Additional industrial land exists outside the industrial parks, such as the 40 acres in Fairhaven's Alden Road area. However, a good portion of this land (Mattapoisett) and Faunce Corner Road in Dartmouth) is not market ready in that substantial infrastructure improvements are needed to use the sites. Given the fairly modest levels of industrial land absorption expected in the region, this inventory appears to address the local industrial land needs for the foreseeable future. Since industrial land is concentrated in Dartmouth within the New Bedford Industrial Park (NBIP), Fairhaven has an opportunity to gain new industrial development by identifying firms not targeted by the NBIP and differentiating itself from Dartmouth and New Bedford in terms of the benefits it offers firms, such as more advantageous zoning, lower land costs, and sewer capacity.

➢ ***Fairhaven's zoning appears to provide a cost advantage to firms developing new facilities in Fairhaven through higher floor to area ratios that lower land costs.***

Some observers indicated that Fairhaven's zoning by-law allows significantly larger floor to area ratios to commercial and industrial users. This provision gives Fairhaven a significant advantage since it reduces the land needed, and thus the land cost, to support a given building size. This advantage obviously grows in significance as the size of a planned building grows. If Fairhaven's zoning does offer a unique advantage in this respect, then Fairhaven should include

this benefit as a major part of its marketing themes.

- ***Fish processing is probably Fairhaven's best immediate target industry. Distribution and light assembly are targets for future industrial development.***

Fairhaven has the potential to capitalize on regional trends to expand its industrial base. However, this effort will be a long-term one, will need to be well thought out and executed, and will require regional success in implementing planned infrastructure improvement at the Seaport and the Airport, strengthening the competitiveness of local manufacturers, growing new manufacturing firms, and the implementing planned infrastructure improvements.

TABLE 1:

INDUSTRIAL REAL ESTATE, ACQUISITION AND NEW CONSTRUCTION, 1994-1995
NEW BEDFORD REGION

Description	Community	Size (in sq. ft.)	Comments
Julius Cooke expansion	New Bedford	22,500	
Babbit Steam expansion	New Bedford	9,000	
Teledyne Rodney expansion	New Bedford	4,000	
American Flexible Conduity	New Bedford	60,000	acquisition of existing building in industrial park
Acushnet Corporation	New Bedford	33,000	acquisition of existing building in industrial park
Nye Lubricants	New Bedford	15,000	acquisition of Badder Building
Titleist	Fairhaven	215,000	acquisition and construction at former AT&T building
New warehouse building	Mattapoisett	33,525	dry goods distributor in industrial park
New warehouse building	Mattapoisett	438	small addition in industrial park area
New warehouse & office	Mattapoisett	5,000	in industrial park for electrical contractor
Total		**397,463**	

TABLE 2:
INDUSTRIAL PARKS IN THE NEW BEDFORD REGION

Industrial Park	Owner	Community	Existing Inventory (in acres)	Recent Sales Activity	Comments
Wareham Industrial Park	Wareham Community Development Authority	Wareham	36	one parcel to firm expanding in park	64 acres sold in 15 years, mostly in the 1990s
New Bedford Industrial Park	New Bedford Industrial Foundation	New Bedford	250	Sales of 2 vacant buildings, approximately 93,000 sq. ft.	No new land sales in 3-4 years
Faunce Corner Industrial Area	Paul Downey	Dartmouth	85	8 acres sold to Law School	Needs roads, limited marketing
Mattapoisett Industrial Park	Dave McIntyre Delaney and Sons	Mattapoisett	30	last sale five years ago	No sewer and road for additional development
Fall River Industrial Park	Greater Fall River Development Corporation	Fall River	60	1993 sale (157,000 sq. ft.) one small sale pending	400 acres sold in 25 years, mostly in the 1970s
		Total	461		

APPENDIX C: TARGETED INDUSTRIES

Based on the overview of the local economy and the economic resources in the region, it is clear that certain industries warrant a more in-depth analysis based on either their current or potential importance to the Fairhaven economy or interest on the part of residents. In choosing industries to target, it is critical to identify existing strengths to build upon. Fairhaven will have faster and more sustainable success in economic development by focusing on industries that "fit" with the Town's assets. Specifically, Fairhaven should focus on industries that take advantage of the Town's water access. In addition, the Fairhaven's historic charm warrants a closer study of tourism as a potential source of business development.

The importance of these industries to Fairhaven is not necessarily measured by the ***number*** of jobs the industry can yield, but takes into account the ***quality*** of those jobs, opportunities for entrepreneurial development, and conformity to the community's vision of the future. Since the mission of this study is to improve the economic well-being of residents, particularly those of low- and moderate-income, one must consider whether the jobs the Town promotes could sustain a family at more than subsistence level. Given the mushrooming of retail jobs in recent years, it is appropriate to consider how the Town can encourage the growth of other types of employment, particularly those that can offer low- and moderate-income residents full-time jobs with benefits. Such jobs are particularly needed to replace those lost through the decline in commercial fishing and manufacturing.

Despite much discussion in the region of developing New Bedford as a multi-modal distribution center through the expansion of the airport, the harbor dredging, and enhanced rail access, the results of these efforts are long-term in nature. Until these regional efforts are complete, it would be premature for Fairhaven to make distribution a priority focus of its economic development efforts. Although the Local Economic Development Partnership expressed early interest in this sector, the study placed increased importance on water-related activities and tourism. Specifically, the industries analyzed in this chapter include:

- ***Marine Industries***
- ***Harbor-related Activities***
- ***Marine Science and Technology***
- ***Aquaculture***
- ***Environmental Technology***
- ***Tourism***

Marine Industries

The residents of Fairhaven have long been tied to the sea. From the days when New Bedford was one of the whaling centers of the world, the region's prime location on the water has led to a wide range of economic activities that have provided a livelihood to the region's residents. A 1991 report on the Massachusetts Marine Industry includes the following activities, all of which are found in the greater New Bedford region:

- commercial fishing;
- fish processing, wholesaling, and retailing;
- fishing materials and supplies;
- marine recreation activities;
- marine electronics;
- aquaculture;
- marine and coastal environmental services;
- marine research and education;
- ship and boat building and repair;
- retail boat sales; and
- water transportation.

Given its continued importance to Fairhaven residents, this section of the report divides these marine activities into three areas: 1) harbor-related activities; 2) marine technology; and 3) aquaculture.

Harbor-Related Activities

➢ ***The fishing industry, which has been a centerpiece of the greater New Bedford economy, has suffered greatly from the depletion of groundfish stocks in the Georges Bank area.***

The National Marine Fisheries Service shows that the average annual landings for cod in Georges bank from 1986-1993 was 60.5 million pounds -- projected landings for 1995 are 6.75 million pounds. Total groundfish landings (haddock, yellow tail flounder, and cod) in Georges bank declined from approximately 90,000 metric tons in 1982 to slightly less than 30,000 metric tons in 1993. One former fisherman in New Bedford estimated that the fishing fleet at its peak was 400-450 boats. Today, there are an estimated 250 boats in the fleet.

Amendment 5 contained restrictions on the industry, intended by federal and regional

➢ ***There have been numerous past and ongoing planning efforts targeted to the New Bedford Harbor.***

- ***The Harbor Master Plan*** is an initiative financed by the New Bedford Harbor Commission and overseen by a committee that includes officials from New Bedford and Fairhaven. The plan is being undertaken by faculty and students from MIT's Department of Urban Studies and Planning and the Center for Real Estate Development. The plan is scheduled to be completed by early 1996. The plan has several objectives:
  - identify key issues related to revitalization of the Harbor as an industrial waterfront;
  - develop a database on physical and land-use conditions;
  - determine the market potential for real estate development in the area;
  - identify community concerns about the Harbor; and
  - develop a framework for future planning for the Harbor.
- ***Harbor Visions! New Bedford*** was a "Charette" in which over 100 people were involved over the October 6, 1995 weekend in New Bedford. The event was sponsored by WHALE, a host of community groups, and the American Institute for Architects. The idea was to bring architects, planners, elected officials, environmentalists, citizens, artists, etc. together to think creatively about the future development of the Harbor. Ideas ranged from an aquaculture center, the depression of Route 18, to an international market terminal. Participants were broken up into 11 working groups. The ideas generated by the groups will be refined and turned into a written report by WHALE by the end of the year.

➢ ***There are growing resources available to the community to address marine-related development.***

- ***Funds to carry out the recommendations of the Governor's Commission on Commonwealth Port Development are included in a Seaport Development Bond Bill estimated to between $250 million and $300 million.*** Versions of the Bill have passed both the Massachusetts House and Senate. A joint committee will resolve differences. The staff director of the Advisory Council is located in the Town Hall in Fairhaven.
- ***The New Bedford Harbor Trustee Council has a pool of $21 million that was secured from the lawsuit against the Harbor's principal industrial polluters.*** The Council is responsible for allocating the money to communities, organizations, research institutions, and businesses that devise projects that address restoration of the Harbor environment. The Council has just distributed a "Request for Ideas Package" that it hopes will result in solid project ideas. The project ideas will help the Council refine its funding criteria, as well as give the Council a better sense of

the size of projects (currently, the Council feels projects could range from $5,000 to several million dollars). The Council is struggling with how much money to distribute in the short-term (i.e., within the next one to two years) and how much of the $21 million to hold onto for future projects.

- Federal and state programs have been put into place to help fishermen and their families. Some of these initiatives include: a $30 million fund to train people in the industry for new careers and jobs; a $25 million boat buyback program; and, a Massachusetts Fisheries Initiative that will establish a statewide fishing industry coordinator, create a revolving loan fund, develop strategies to strengthen and grow the aquaculture industry in the state, and undertake a marketing program that will encourage greater acceptance of underutilized species and attempt to develop market penetration in Europe.

- In the New Bedford area, two new initiatives are targeted to adjustment in the fishing industry. One is the creation of the New Bedford Seafood Coalition, a private nonprofit organization of fishermen, boat owners, seafood processors, and business services industries to the industry. The Coalition received $100,000 in federal funds to hire staff and develop the capacity to help the industry find value-added opportunities, make better use of fish byproducts, develop markets for alternative species, and make effective use of training programs for fishing families. The other effort is the Fishing Community Entrepreneurship Campaign, a program of People Acting in Community Endeavors. The Campaign provides small "working capital" loans to fishermen who want to start their own business. The Campaign received a three-year $100,000 grant from the Cox Charitable Trust, and $30,000 from the U.S. Department of Commerce.

➢ ***A variety of organizations are involved in addressing the economic and environmental challenges related to the Harbor.***

- ***Buzzards Bay Protection*** brings together three organizations for the clean-up and long-term protection of Buzzards Bay, including New Bedford Harbor. ***The Buzzards Bay Project*** is a collaboration between the federal EPA and the state of Massachusetts' Coastal Zone Management Office. The Project was initiated in 1985 through Congress' National Estuary Program. The Program provides funds for research and monitoring of critical estuaries. The Buzzards Bay Project developed a comprehensive Conservation and Management Plan that was approved by the state and the federal government. Implementation of the Plan is now being carried out by the ***Buzzards Bay Action Committee (BBAC).*** The BBAC is a nonprofit organization that includes representation from the 17 municipalities on the Bay. BBAC provides technical assistance and funding for efforts that deal with waste water treatment, pollution prevention, storm water control, road run-off, septic system problems, and housing and commercial growth. The BBAC works closely with the Buzzards Bay Project.

- The ***Coalition for Buzzards Bay*** is a grassroots citizen organization founded in

1987. Its mission is to promote awareness of the previous resources of the Bay and to work toward the clean-up and preservation of the Bay. Volunteers from the Coalition collect water samples at 87 locations around the Bay that are used by local communities to test water quality. The Coalition monitors the work of local conservation commissions and boards of health as it relates to the Bay. Also, staff and volunteers conduct educational programs, work with organizations like the BBAC, and get involved in projects like the New Bedford Airport extension.

- ***The Seaport Bond Advisory Council*** is an outgrowth of the *Governor's Commission on Commonwealth Port Development,* a report issued in October 1994. The Report offers a detailed description and analysis of the major ports and harbors in the state, and offers a set of recommendations for the enhancement of each port. The Seaport Advisory Council is a 12-member board that is charged with overseeing the implementation of the recommendations contained in the Governor's report. Recommendations include a broad range of activities, including dredging, bulkhead repair, bridge replacement, rail upgrading, signage, dock improvements, and business development.

➢ ***Numerous other planned infrastructure and development projects will affect the future of the New Bedford Harbor and its economic development potential***

- ***The Development of the Commonwealth Electric Site*** is a major project that includes plans for an aquarium, a passengers' ferry terminal, a 200,000-square-foot convention facility and hotel, in addition to a first-rate restaurant and retail shops. Commonwealth Electric has offered the site, which is approximately 30 acres and includes the 460,000-square-foot power station. The Greater New Bedford Zoo and Aquarium Corporation is spearheading the project. Funding for a $400,000 feasibility study for the Aquarium is being pursued. And a $50,000 feasibility study is now planned to create a high-speed ferry terminal (for passenger service between New Bedford and the islands).

- ***The New Bedford Waterfront National Park*** is a an effort to bring National Park designation to the City of New Bedford. Under the leadership of the Waterfront Historic Area League (WHALE) and scores of historical preservation, neighborhood, community, and business groups, as well as political leaders, a three-year plan was developed to create the Park. The Park would focus on the history of the whaling industry, as well as the Harbor and the waterfront. Official designation would mean that New Bedford would be recognized as a nationally significant site of historical and cultural importance. Designation would also mean federal funding for staffing, planning, and interpretation. The Park could also apply for other federal funding and grants for signage, infrastructure improvements, and maintenance of existing buildings and historical resources. The Park would cover the area of the existing waterfront historic district. Final approval is currently pending in the U.S. Senate.

- ***The New Bedford Airport Expansion*** will extend the current runway by 3,000

feet. The extension would allow the airport to land medium-sized jets and it would open the region to increased passenger and cargo activities. The extension would also provide international connections with Canada and Mexico, which are particularly relevant due to the recent NAFTA agreement (the Foreign Trade Zone designation could also be better utilized than it is currently). Finally, the airport, after the extension, would be a major link within the region's efforts to develop a strong inter-modal transportation system (air, rail, water). The estimated cost of the extension is $30 million. In early October, Governor Weld submitted a $2 billion transportation bond bill that includes $27 million for the New Bedford Airport. The bill faces hurdles in the legislature. The extension also faces opposition from the environmental community that fears the degradation of approximately 58-eight acres of wetlands.

- ***Superfund Clean-up*** of the designated "hot spots" of PCB-contamination was completed in September of 1995 with the removal of 300 tons of sediment (half of all the PCB-laden sediment in the Harbor). The next phase of dredging will occur over the next few years principally in locations in the Inner Harbor, Outer Harbor, and Upper Buzzards Bay. Total dredging is estimate to be about one-half million cubic yards. In addition to the PCB-contaminated soils, there are spots in the Harbor where metals have been pumped -- these are planned to be dredged along with the contaminated soils in Phase II. Overseeing the clean-up is the District EPA office, the City of New Bedford, the New Bedford Forum (which is a state-supported dispute resolution group), and Hands Across The Water. The latter is a grassroots citizen's group working with and monitoring the work done by the EPA. One of the biggest challenges confronting the clean-up is storage and disposal of the contaminated sediment.

- ***The New Bedford Casino*** is a proposed gambling facility that would be owned and operated by the Martha's Vineyard Wampanoag Tribe. A compact was signed between Governor Weld and the Tribe on September 29, 1995. The compact gives the Tribe exclusive casino rights in eastern Massachusetts in return for $90 million a year in payments to the state. Twelve percent of that would be distributed to cities and towns in Bristol County. The project is an estimated $175 million complex that would be located on the New Bedford Municipal Golf Course. Several hurdles need to be overcome before the project is a reality. First, the state legislature was given the opportunity to vote on the compact by Governor Weld. Second, the transfer of the golf course land to the Tribe requires a two-thirds vote of the state legislature. Third, a non-binding November 7 referendum in New Bedford will send an important message to the legislature about the extent of local support. Fourth, the project also needs approval from the federal Department of the Interior.

➢ ***The Port functions very effectively with four principal sets of activities.***

Fishing and processing-related business operates on the southern end of the New Bedford side of the Port, while commercial cargo-related activity continues on the northern side. In

commercial cargo and ship repair activity. Currently, large haulers of fruit and produce cannot enter the Port, and ship repair yards in Fairhaven have had to turn business away. The dredging of the New Bedford/Fairhaven Port is one key item in the Seaport Bond Bill.

➢ ***The Harbor and the Bay are the critical economic and environmental assets of the region.***

Activities related to the Bay have been an engine of the regional economy. Although the fishing industry has declined, there is extraordinarily important marine economic activity that still takes place. And, if any of the initiatives outlined above come to fruition, the region, the Harbor, and the Bay stand ready for a true transformation of the region's economy. If the actual resource -- the marine environment -- is not protected, the potential for economic benefit is lost.

➢ ***Buzzards Bay, unlike many other bays around the country (e.g., Chesapeake Bay), is relatively healthy as a marine eco-system and an economic unit.***

The Bay is a very vibrant and proactive marine and economic system. Clearly, it has pollution problems, but not on a scale that other systems experience. Given the relatively good health of the Bay, the challenge is to keep it free from harmful environmental degradation and to devise a plan that will capitalize upon its resources in a sustainable fashion.

➢ ***A substantial amount of marine and environmental analysis of the Harbor and the Bay has occurred, but very little economic analysis has occurred.***

The Harbor and Bay "economies" are little known and little understood. Some municipalities and state agencies have catalogued or computed some of the economic activity that results from the Harbor and the Bay, but no overall analysis and quantification of the economic impact of marine and recreational activities in the Harbor and Bay have been produced. Consequently, the true picture of the Harbor/Bay economy is incomplete or anecdotal.

➢ ***A "sustainable" Buzzards Bay economy is viewed as an attractive economic and environmental development strategy, but the idea lacks a concrete plan.***

The Bay has all the ingredients for developing a model "sustainable development" initiative that results in job creation and resource protection at the same time. On the one hand, waste water treatment and storm water controls have been put in place, and communities are dealing with issues around pollution sources. As a result, a conservation and protection ethic is beginning to take hold in the Harbor and the Bay. On the other hand, there is little conceptual or practical work done that addresses the economic part of the sustainable development equation. The Bay has the potential for being a nationally-recognized testing ground of sustainable development if the proper analysis and strategic planning are done.

➢ ***The Harbor and the Bay are fortunate to have access to so many organizational and research institutions in the region.***

Noted above were numerous federal, state, regional, and local organizations and

institutions that are actively involved in protecting New Bedford and Fairhaven Harbor, as well as the Bay. In addition to these resources, the Harbor has other institutions to draw upon for assistance: the Woods Hole Oceanographic Institute, one of the premier oceanography and marine centers in the world; the Marine Biological Lab, another world-class institution that attracts some of the top molecular and marine biologists from around the globe; the "No-Name Group," a loose association of some of the top thinkers and key business executives in the New Bedford region; the Urban Harbors Institute of UMass-Boston, which has offered faculty guidance and research on a range of issues affecting the Harbor; faculty from the UMD's Center for Marine Science and Technology; and the Massachusetts Maritime Academy, which has a first-rate marine safety program.

Marine Science And Technology

The marine technology industry encompasses a range of linked components, including boat and shipbuilding, ship materials (such as advanced composites) and component parts (e.g., winches), marine electronics and instrumentation, marine environmental products and services (e.g., environmental monitoring), oceanographic research, and offshore drilling. In this section, we are primarily concerned with marine electronics and instrumentation, which holds potential for growth in southeastern Massachusetts.

- ***While the overall market for marine technology is small, and has been seriously impacted by declines in U.S. defense spending, the industry has a strong cluster in Southern New England.***

Overall, the marine markets are not large. In 1991, U.S. value of shipments for shipbuilding and repair was $10.7 billion, and for boat building and repair, $3.5 billion. It is estimated that the U.S. marine electronics and instrumentation industry has revenues of $5 billion annually, much of which is sold overseas. For the most part, the industry is characterized by small companies (employing less than 100 people). Most firms occupy a small niche in the market, such as for sonar equipment or underwater cameras for oceanographic research.

Most of the total sales have historically been to the federal government, in particular the U.S. Navy for submarines, ships, sophisticated offensive and defensive underwater weapons systems, and sonar. Other important markets include recreational boating, commercial fishing, and oceanographic research. These markets purchase vessels, deck, and underwater equipment, and sophisticated instruments such as sonar and navigational equipment.

Federal government procurement of marine technology for defense purposes is currently in decline, which is causing many companies to reduce their workforce. Private markets for recreational and commercial uses have also been down in recent years due to the economy and overcapacity in the commercial fishing industry. Meanwhile, other markets, such as the environmental sector, are growing and marine technology companies are exploring them.

Most marine technology companies are clustered in the northeastern part of the U.S.,

including Massachusetts, Connecticut, Rhode Island, and Maine. Naval shipbuilding is concentrated in Maine, Connecticut, and Rhode Island, while smaller vessels for private recreational and fishing markets are built in Florida. Both Massachusetts and California have a concentration of marine electronics firms. Seattle also has a small portion of the industry.

Because of its location and history, southern New England is home to a significant percentage of the U.S. marine technology industry. Massachusetts is home to approximately 60 out of the 150 companies in the U.S. marine instrumentation industry. A recent Massachusetts study indicates that the marine technology industry employed about 22,000 people in 1989, over three-quarters of whom were in marine instrumentation. While the report suggests its estimate is conservative, it is apparent that the industry is not large by comparison to computer electronics or software industries.

Southeastern Massachusetts has concentrations of employment in several areas of marine technology. Fairhaven has a number of small ship repair companies that serve the fishing and recreational industries. Falmouth is the hotspot for marine instrumentation. There are about 20 companies located in the Falmouth area, nearly all of which were an outgrowth from Woods Hole Oceanographic Institute (WHOI). They include companies like Benthos, a manufacturer of oceanographic, robotic, and remote environmental systems; ORE, a manufacturer of acoustic flow measurement systems; Datasonics, which manufactures underwater acoustic instrumentation; and C-MAP, which produces electronic chart display and information systems. Marion, Massachusetts, just 40 miles away from Falmouth, has Sippican, the largest marine technology company in Massachusetts. Sippican employs about 200 people.

Marine electronics firms favor access to research, skilled workers, and proximity to markets and the ocean. Historically, these firms have developed near the institutions, such as Woods Hole, that provide the technology and markets for their products. Woods Hole has provided not only technology, entrepreneurs, and employees to marine technology companies, but it has also served as a market for the products. Many marine technology firms develop and sell devices to WHOI researchers as well as to other oceanographic researchers around the world.

Rhode Island and Connecticut are home to a number of companies in the transportation end of the industry, in particular those active in defense markets. For example, Raytheon Submarine Signal Division is located in Portsmouth, Rhode Island. It employs 1,900 workers in the manufacture of antisubmarine warfare equipment and transportation marine systems. Also nearby, KVH Industries, Inc. of Middletown, Rhode Island manufactures major aircraft and transportation marine systems. Rhode Island is also home to a number of successful companies involved in boat production such as Custom Yacht Building in Bristol.

- ***The region has a number of important resources that help drive innovation and growth in the industry.***

First of all, there are a number of world and nationally renowned research institutions that perform extensive basic and some applied research in the area of marine science and instrumentation. These institutions are a source not only of research and innovation, but of highly-skilled workers. These institutions can play a critical role in an economic development strategy involving marine technology. Institutions actively involved in the industry are:

- ***The Woods Hole Oceanographic Institution (WHOI)*** is one of the nation's two preeminent oceanographic research facilities in the country and is world renown. (The other institution is the Scripps Institute, located on the west coast.) WHOI develops a fair amount of new technology and its research staff are available for contract research to private firms. It also has a marine policy unit that does research on marine technology markets and policy.

  WHOI has begun to look more closely at commercializing the research and technology undertaken by its scientists and engineers. For example, the Office of Commercial Affairs provides intellectual property protection through a number of legal mechanisms. Also, in 1993, WHOI created the Quissett Development Corporation, a wholly-owned, for-profit subsidiary of the Institution. The Development Corporation will be transferring the technology developed at WHOI through licensing and joint partnerships with business. Four patents were issued in 1994 for WHOI technology. In 1995, eight invention disclosures were made and four patents pending.

- ***The Marine Biological Laboratory (MBL)*** was founded in 1888 as a nonprofit corporation for research and education in basic biology. The major thrust of research at MBL is in cell and developmental biology, ecology, neurology, sensory physiology, microbiology, marine biomedicine, and molecular evolution.

  Research performed at MBL has a number of applications that help in understanding the human biological system. Research on marine systems has led to the development of cancer therapies, more effective contraceptive methods, and treatments for infertility, epilepsy, and Alzheimer's disease. Research done on the horseshoe crab resulted in the discovery of an agent that catalyzes clotting in the blood. The product, referred to as LAL, contributed to the founding of an MBL spin-off business, Associates of Cape Cod. The Falmouth-based company now sells the product worldwide.

  To further the application of MBL research, the Lab organized a conference in September 1995. Two hundred fifty scientists, business leaders, and inventors met to discuss the application of marine biological research to the field of biotechnology. Some of the premier biotechnology and pharmaceutical companies in the U.S. took part in the symposium. The Lab is also interested in patenting and licensing its research. To date, five patents have been secured, and three licenses were given on research undertaken at the Lab. In addition to biomedical applications, MBL scientists are also working with Taylor Seafood, a local company, to enhance the production of sea scallops through aquaculture.

- ***UMASS Dartmouth*** has considerable resources for the marine science and technology industry. The College of Business and Industry helped prepare two documents on the industry: The Massachusetts Marine Sector: A Discussion Draft, 1995; and a 1994 report entitled, The Marine and Water Environmental Industry: Global Markets, U.S. Markets, and the Massachusetts Industry. Each of

these documents is being distributed among firms in the industry.

The Center for Marine Science and Technology (CMAST) is the focal point for applied and basic research at the University. CMAST faculty and students have been involved in research projects in the New Bedford/Fairhaven Harbor, Buzzards Bay, the Cape, and the Islands. Faculty have worked with some of the region's marine instrumentation and electronics forms -- Datamarine and Datasonics are two examples. Also, CMAST faculty and staff will finally see the construction of a new marine science center that has been in the planning stages for several years (construction will begin in December of 1995). The new center is a $10 million, 32,000-square-foot facility that has 14 research labs, several holding tanks, a boat ramp, and pier. The facility will be built near Fort Rodman in New Bedford. The center will help position CMAST and the University as a central resource for the fishing industry, the marine science industry, and organizations and municipalities committed to protecting their coastal ecosystems.

- ***UMass Boston*** has two resource organizations that are relevant to the New Bedford/Fairhaven Harbor. One is the Urban Harbors Institute founded in 1989. The Institute conducts research and offers policy and technical assistance to communities, governments, and business in a number of different areas, including water quality, harbor management, waterfront land use and regulations, and water transportation. The Institute has worked with several Massachusetts communities: a pollution prevention project in the Taunton River Watershed; a land use, infrastructure, and economic analysis for the Gloucester Waterfront; and, a consensus-building effort on the future use of the Dorchester Bay Basin.

  The other resource is the ***Harbor and Coastal Center*** (Center) which was founded in 1992. The Center's focus is more international in scope and it provides research and technical assistance on management of marine and coastal resources, ports and harbors, and related environmental issues. The Center's areas of expertise include: port and harbor management; coastal and ocean laws; sustainable development; sustainable tourism and eco-tourism; and fisheries management.

- Cape Cod and southeastern Massachusetts are home to a number of other research efforts, including the ***Northeastern University Department of Oceanography*** in Nahant, the ***National Marine Fisheries Service Research Center*** in Woods Hole, and ***Massachusetts Maritime Academy***. ***MIT's Department of Ocean Engineering and the Sea Grant Program*** have an industry outreach effort and train graduates who work in the industry. ***The Massachusetts Foundation for Excellence in Marine and Polymer Sciences*** was the conduit for the U.S. National Marine Electronics Agenda, which was developed through the Marine Instrumentation Panel.

➢ ***Currently, several industry associations serve firms and research organizations in the marine technology industry in Massachusetts and southern New England. These organizations are potential resources in any targeted industry strategy.***

- ***The Massachusetts Marine Technology Manufacturing Network*** is a new industry organization of marine technology manufacturers, their suppliers, marine consultants, and research institutions. The Network received startup financing from the Massachusetts Bay State Skills Corporation. The intent is to strengthen the marine science and technology industry in the state by developing new markets, by helping companies reduce costs (e.g., through a cooperative insurance program), and by helping companies become ISO 9000 certified. The Network has volunteer staff and a board of directors that will be charting a more definitive course for the organization in the next few months.
- ***The Marine Technology Society (MTS)***, New England Section, is the regional arm of the national professional association in this field. The organization has 222 members, the bulk of whom are located in southern New England.
- ***The Marine Science and Technology Committee (MAST)*** of the Environmental Business Council of New England is an association of marine-related firms that was initiated several years ago.
- ***The Rhode Island Marine Trade Association*** represents marine technology companies in that state.
- ***The New England Defense Adjustment Project, Experimental Marine Technology Experiment (EMTEX)*** is a federally-funded initiative overseen by the states of Massachusetts, Connecticut, and Rhode Island. The three states undertook a collaborative approach because of the existing industry concentration in the region and the industry's strong dependence on the military for research contracts and for markets. The intent was to provide the resources and support systems to move these firms away from their reliance on the military. There were two principal components of the Project. First, there was a comprehensive market analysis that examined opportunities throughout the world. The report documented the areas where marine-related activity was likely to occur, the estimated percentage of growth, and the constraints for entering those global markets. The second component of the Project was the development of an industry expansion model that would, on a pilot basis, partner firms with so-called non-business organizations and associations to pursue new markets. The experiment would test the viability of several partners selecting a market or niche and then developing a strategy for penetrating or capturing the niche. If successful, the model could be used elsewhere in southern New England to help marine science firms lessen their defense dependency, while increasing revenue and jobs.

➢ ***Although not in Massachusetts, there are many Rhode Island and Connecticut institutions that play an important part in the region's marine technology industry. A marine-based industry strategy should attempt to draw upon the specializations available at these institutions as well.***

They include:

- ***The Naval Undersea Warfare Center (NUWC)*** in Newport, Rhode Island provides research and testing support to the Navy's submarines and offensive and defensive underwater systems. Of the $900 million annual budget, about $21 million in contracts went to Massachusetts firms. In the future, NUWC will focus more of its resources on commercial applications. For instance, it will be working on the development of systems and equipment that can protect coastal environments from oil spills.
- ***The North Atlantic and Great Lakes Undersea Research Center (NURC)***, in Connecticut is one of six centers around the U.S. funded by NOAA. It supports civilian scientists in underwater research and undertakes research of its own. Research includes biogeochemical studies (cycling of organic and inorganic contaminants through ecosystems -- sampling technologies); midwater biology (delicate mechanisms); habitat studies (smaller scale analysis of fisheries); geological studies (sidescan sonar); ecosystem function and community structure (natural variability); and assessments of ocean dumping. The Center has been approached by several defense-dependent companies regarding collaborations, but nothing has transpired.
- ***The Marine Sciences Institute*** is the research arm of the University of Connecticut's Department of Marine Sciences, located in Groton. Also on that campus is the U.S. Coast Guard Research and Development Center. There also is a marine small business incubator (Seatech) located in Groton.
- ***The University of Rhode Island (URI)*** has the Graduate School of Oceanography, the Ocean Engineering School, the Department of Marine Affairs (marine policy), and marine-related activity in the Departments of Geology, Physics, and Resource Economics. A new Ocean Technology Center is planned for 1995-1996. URI received a $900,000 federal grant toward construction of the Center which is expected to cost $1.2 million. The new 8,000-square-foot facility will consolidate all activities of the Graduate School of Oceanography.
- The Economic Innovation Center has initiated the ***East Bay Economic Initiative (EBEI)***, a public/private collaborative effort to revitalize the marine trade industry in the East Bay section of Rhode Island.

➢ ***Marine instrumentation and electronics is the dominant sub-sector within the region's marine science and technology industry.***

The marine science and technology industry is comprised of several different sub-sectors:

environmental services, instrumentation and electronics, seafood, ship building/repair, boat building/repair, transportation, and recreation. The instrumentation and electronics component, principally in the greater Falmouth area, is clearly the most dominant sub-sector with over 20 firms.

➢ ***The foundation of the marine instrumentation and electronics industry in the region is strong.***

There are more than 20 firms currently in the region, most of which have been in business for between 10 and 25 years. Most have a well-defined market niche and a presence in the marketplace. Most have been flexible in their business strategy and entered market niches as opportunities have emerged. These companies have close working relationships with the major marine research institutions in the southeastern Massachusetts region, and they benefit from this relationship. Finally, the state and the region have targeted this industry as a regional priority and investments have been made in the form of grants, training, and manufacturing assistance.

Aquaculture

National Industry Overview

➢ ***While aquaculture is a rapidly growing industry nationally, the domestic industry accounts for a very small portion of global aquaculture production.***

Aquaculture, the raising and harvesting of fish and shellfish species or sale to commercial markets, has grown rapidly in the U.S. Aquaculture is the topic of much discussion in the U.S. both because it has demonstrated rapid growth in the last decade and because further expansion appears virtually assured. Estimates of the tons of fish and fish products produced through aquaculture show that the U.S. market has grown 20 percent a year on average since the 1970s. It appears likely that the industry will continue its dramatic pattern of growth. A 1994 report by the U.S. Department of Commerce predicts that aquaculture production will grow from its current $800 million value to between $3 and 5 billion, accounting for more than 35 percent of the nation's seafood supply in 2005.

However, the domestic market is still only a small component of worldwide aquaculture production. In 1990, the U.S. accounted for only 2 percent of worldwide production. U.S. aquaculture producers raised an estimated 880 million pounds of product in 1991 valued at nearly $730 million. Yet, even with its relatively small portion of the world market, the U.S. is the largest producer among western nations. Currently, aquaculture is dominated by Asian countries. China, the largest producer of cultivated fish, accounted for 46 percent of the global aquaculture industry.

➢ ***Within the relatively small U.S. industry, Massachusetts is hardly a dominant force. Its potential is evident in other New England states.***

Despite superb fresh water and coastal resources for aquaculture, Massachusetts lags behind several other states that have seized the opportunity to develop this new form of agriculture. Massachusetts accounted for less than 1 percent of national aquaculture production, generating only $8 million annually (1992 farm-gate value).

The U.S. aquaculture industry is largely concentrated in the south, where a warmer climate allows species such as catfish to be grown in outdoor ponds year round. The largest producing states are Mississippi, Alabama, Louisiana, and Arkansas. Idaho, California, and Washington are also big producers of trout, oysters, and salmon. Massachusetts, according to a 1991 study, was ninth nationally in value of production, although the state's production was 1/28th of Mississippi's.

According to a 1993 study, Connecticut is the largest aquaculture producer among the northeastern states based on the strength of its oyster farming. Maine, which has developed a relatively new aquaculture industry focusing primarily on salmon net-pen farming, is the second largest producer in the region generating almost $43 million in 1992.

There are about 190 aquaculture farms statewide, most of which are small-scale operations focusing on shellfish farming. Within Massachusetts, there are two companies at the forefront of closed system finfish aquaculture. Most notably, AquaFutures, located in western Massachusetts is a big, closed system operation that raises approximately one million pounds of hybrid striped bass annually. Tilapia, a fish native to Asia and Africa, is also being raised in Massachusetts by Bio-Shelters.

➢ ***Demand for cultivated fish and seafood is expected to expand.***

In a 1994 article in *Restaurant Business*, USDA economist David Harvey predicted that farm raised seafood will account for 25 percent of the U.S. supply by 2001. Consumers will substitute fish caught in the wild with cultivated fish and seafood at an increasing rate for a number of reasons. First, there is a decreasing supply of traditionally caught fish. The collapse of the groundfish industry locally is well known. In the Pacific, curbs on salmon fishing are also taking a toll. Globally, 13 of 17 major fishing areas are considered depleted. Second, the stability created by cultivating fish appeals to vendors who like the stable prices and assured supply. Vendors also give farm-raised product high marks in quality. The final factor that will spur demand is the predicted decline in price of farm-raised fish which should make it more competitive with wild caught fish and seafood.

➢ ***The industry encompasses a number of distinct product segments with differing needs and opportunities.***

The general definition of aquaculture includes a variety of growing methods and species. Based on the Federal Aquaculture Development Strategy, Canada and United Nations FAO, aquaculture is defined as forms of agriculture devoted to the propagation, culture, and husbandry of aquatic and marine plants and animals in marine, brackish, or fresh water. Culture implies

some form of intervention in the rearing process, such as regular stocking, feeding, and protection from predators. Culture implies individual or corporate ownership of the stock being cultivated. Within this broad category are varying fish and cultivation methods. Specifically, aquaculture includes:

- shellfish culture;
- marine finfish culture;
- freshwater fish culture;
- closed system finfish (both freshwater and marine); and
- aquatic plants/algae.

The most frequent domestic products of fish farming include: catfish, trout, crawfish, and salmon. The baitfish industry also uses aquaculture techniques. Other farm raised species include hybrid striped bass, summer flounder (work underway), tilapia, mollusks, shrimp, and ornamental fish.

Massachusetts Industry

➢ ***In Massachusetts, the industry is concentrated in shellfish culture although freshwater fish production is growing as the technology matures.***

The two species of shellfish currently harvested using aquaculture are oysters and northern quahogs. Massachusetts grows more quahogs than any other species. Connecticut for many years had a large aquaculture industry specializing in oysters, but disease has taken a serious toll on the culturing of oysters all along the eastern seaboard. Bay scallops are more difficult to grow although there has been some success in Massachusetts (particularly by the Fairhaven firm). Sea scallops, an important component of the traditional fishing industry in Massachusetts, have yet to be commercially cultivated successfully. Work is also underway on soft shell clams.

As for freshwater fish, trout, tilapia, and hybrid striped bass are the most frequently cultured in the U.S.. There are a number of methods by which freshwater fish can be cultured. While pond culture and flow through systems are the traditional means for freshwater cultivation, recirculating systems are an area of growth. These closed systems involve the application of complex advanced technology. As the technology becomes more widely understood, this type of technology offers perhaps the best avenue for expansion of freshwater fish production. Particularly in the northeast, recirculating systems are considered by some to be the only option for competitive production.

➢ ***While Massachusetts has lagged behind other states in its support of aquaculture, a flurry of recent activity points to a growing recognition of aquaculture's potential in the state.***

Massachusetts lags behind a number of states in terms of the attention it has placed on

aquaculture as a growth industry. However, the situation appears to be changing rapidly. In part fueled by the destruction of the local fishing industry, the state has recently embraced aquaculture as an alternative for displaced fishermen. The new attention placed on aquaculture is evidenced by the following:

- In September of 1995, Massachusetts Coastal Zone Management produced the Massachusetts Aquaculture White Paper and Strategic plan with the assistance of a team of experts.
- In April of 1995, a strategic plan for the aquaculture industry was released by The Cape Cod Resource in conjunction with the Massachusetts Aquaculture Association. The project was funded by the Executive Office of Communities and Development and the Executive Office of Economic Affairs.
- Portions of the funds allocated to Northeast Fisheries Initiative and the Massachusetts Fisheries Initiative have been used to promote aquaculture in Massachusetts.
- Educational outreach in the state drew broad interest. In cooperation with the National Marine Fisheries Service/Fishing Family Assistance Centers, and the Center for Marine Science, SRPEDD sponsored a three-day symposia in February 1995 that was attended by more than 300 people.

➢ ***Municipal authority in determining the use of coastal areas has created a complex process that has hampered the development of shellfish aquaculture in Massachusetts.***

The regulatory environment is far more complicated in Massachusetts than in Maine or Connecticut, where aquaculture is far more prevalent because of the strength of town oversight. Unlike in Maine or Connecticut, in Massachusetts, towns control the state waters up to three miles out, where federal authority takes over. A more serious blow was dealt to the industry when the state supreme court ruled that land owners have the rights to the use of coastline out to the extreme low water mark, further limiting the areas available for aquaculturists.

➢ ***Some fear that Massachusetts may never be able to fully reap the potential of its coastline for aquaculture due to citizen opposition.***

Many industry observers feel the competing interests who would prefer to see coastal resource for recreational or private use will stymie the development of coastal aquaculture. Boaters desiring unfettered access to coastal waters, homeowners interested in preserving their pristine views, and environmentalists fearing disturbance of existing nurseries have all weighed in to prevent the widespread introduction of aquaculture on Cape Cod and southeastern Massachusetts. Traditional fishing interests have also expressed opposition fearing both competition and lost territory for wild catch fishing.

Industry Needs

➢ ***The aquaculture industry nationally has difficulty obtaining traditional financing.***

As with many new, as yet unproven industries, traditional lending institutions are hesitant to invest funds in aquaculture. Aquaculture ventures have even greater difficulty securing financing than other emerging industries because of the unpredictable effect mother nature can play on even the best run operations. Weather and disease pose serious concerns for traditional investors. These factors, combined with the fact that the track record of existing aquaculture ventures is quite shaky, have deterred banks from offering loans to new aquaculture ventures.

➢ ***Information and technology transfer are critical needs of the industry.***

Like other forms of agriculture, the aquaculture industry needs mechanisms to share best practices, seek advice on vexing problems, and exchange new techniques. Growers hope that the transfer of such information will reduce the rate of business failure, which has a positive long-term effect on the availability of financing. In other forms of agriculture, Cooperative Extension programs are highly successful. Currently in Massachusetts a handful of organizations provide a patchwork of assistance.

➢ ***Training for people interested in entering the field would also strengthen the industry.***

In addition to information transfer among existing entrepreneurs, the industry statewide sees the need for training for both future workers and future entrepreneurs in aquaculture. The industry and technology require skilled and experienced labor. Workers have to know something about chemistry and physics, as well as agricultural marketing. Given the concentration of shellfish cultivation in southeastern Massachusetts, the University of Massachusetts at Dartmouth is the likely site for a program focusing on marine aquaculture.

➢ ***Aquaculture needs the following to be successfully instituted: a lot of capital, inexpensive land, good infrastructure, a supportive regulatory structure, low energy costs, and proximity to markets.***

- ***Capital:*** Aquaculture businesses, particularly those using water reuse systems for finfish production, are very capital intensive. They require tanks, pumps, filtration systems, and sophisticated monitoring equipment to maintain constant conditions. The return on investment does not come immediately either, as species need to grow before they can be harvested. Profits tend to be long-term.
- ***Infrastructure:*** Because of the high capital costs associated with water reuse, companies seek low infrastructure costs. Indoor farms require inexpensive real estate and low energy costs. Old warehouses and mills have been used by these businesses. Often, they seek to lower energy costs by locating close to heat

generating facilities.

- ***Water:*** Water is critical to aquaculture businesses. Open systems need lots of water with specific qualities, such as salinity and temperature, depending upon the species being raised. Closed systems require less water overall because they recirculate it, however, the quality has to be exceptional. Typically, they use well water, because it is not chlorinated. Other basic chemical and mineral components to the water are important as well.
- ***Regulation:*** Aquaculture businesses must be permitted by the state. The possession and importation of fish have to be permitted as does the discharge into surface water or into town sewer. The Department of Fisheries is currently reviewing its regulations, and is considering placing a temporary moratorium on the importation of non-native species into the state until after new regulations are issued. One person familiar with Massachusetts regulations said they were not conducive to aquaculture -- not because the regulations are hostile to aquaculture, but because they do not specifically address it. The absence of an aquaculture category makes it confusing to potential businesses and can discourage them.
- ***Markets:*** Proximity to markets is important too, although high-value-added product can be shipped long distances affordably. Successful export of aquaculture product would depend upon access to good air transportation infrastructure.

Aquaculture at the Regional and Local Levels

➢ ***Shellfish aquaculture is an established industry in southeastern Massachusetts although it is primarily concentrated on Cape Cod.***

Estimates of the dollar value of the shellfish harvest in southeastern Massachusetts are about $4 million. The industry is notorious for under-reporting its yield so the dollar value of the crop may be significantly higher.

Aquaculture in southeastern Massachusetts is not necessarily a private business venture. A number of towns use the funds generated from shellfish licenses to support municipal propagation programs. For instance, several Cape Cod towns purchase shellfish seed and grow them to a point in which they are less susceptible to predators in the natural environment. The seed are then scattered in the bays where they then grow until they are harvested by commercial fishermen and/or the general public. Some communities, such as Chatham, have decided that they do not wish to promote private aquaculture but engage in extensive propagation to support their commercial fishermen. As for private aquaculture, a number of towns have a few private sea grants, but there is quite a concentration in Wellfleet.

➢ ***While there are a number of trout farms scattered across the state, most indoor finfish cultivation is centered in western Massachusetts. However there is some movement to encourage this growing, technologically intensive form of aquaculture to expand on Cape Cod and in southeastern Massachusetts, particularly in the New Bedford area.***

Southeastern Massachusetts is home to some large trout farms around Plymouth and one large mouth bass farm. However, the most notable new indoor facilities are located in western Massachusetts.

In southeastern Massachusetts, the owners of the Dan'l Webster Inn created their own farm in Barnstable to raise hybrid striped bass for their restaurant and use the waste water to fertilize hydroponically-grown plants.

While there are no commercial scale activities in the New Bedford area currently, there is much interest and discussion. Chancellor Cressy at UMass Dartmouth is interested in promoting developing aquaculture facilities in abandoned mill buildings in Boston, New Bedford, and Gloucester and he is seeking funding for a feasibility study.

There is growing private sector interest as well. A local fish processor, Trio Algarvio, has formed an alliance with two aquaculture companies to serve as a growout facility for summer flounder. While the implementation of this plan is on hold until the fish hatchery is constructed in New Hampshire, Trio Algarvio has already begun growing eels at its New Bedford facility.

The area has not only attracted the interest of local firms for aquaculture but international firms as well. A Taiwanese firm has been searching for a site in the region to locate a large eel recirculating facility. The firm is looking for a three- to four-acre site within an industrial park already serviced with sewer and water on which it would build its own facility.

➢ ***Prohibitively high energy costs are a serious detriment for southeastern Massachusetts in attracting indoor aquaculture facilities.***

Fairhaven is well situated for indoor finfish aquaculture facilities in terms of its water and sewer capacity. However, most recirculating systems use large amounts of energy to heat the environment needed for the fish. As a result, some have explored locating a recirculating facility near a power generation facility where heat produced at the plant could be used by the aquaculture business. Given the general concerns about energy costs in the region, Fairhaven is at a similar disadvantage, along with its neighbors, in attracting a finfish facility.

➢ ***The growing number of regional resources to support aquaculture growth is a testament to the region's interest this emerging industry.***

In response to the fishing industry decline, federal and state resources have flowed to the region to support a variety of initiatives to assist displaced fishermen. Some of those resources can be used for aquaculture development. In addition to the technical resources available at UMass Dartmouth in the Northeastern Regional Aquaculture Center and the Department of Marine Science, new financial and technical assistance resources are available. The Southeastern

Regional Planning and Economic Development District received funding for an aquaculture specialist on staff to work with both businesses and municipalities to promote aquaculture. The New Bedford Corporation has offered financial assistance to the Fairhaven Fisheries Institute to conduct a feasibility study of net pen aquaculture. New Bedford Vocational School has installed a small recirculating system to grow tilapia as a tool for teaching about aquaculture.

➢ ***Fairhaven is considered a strong location for shellfish aquaculture because of its protected coastline. Because of this asset, it is already the location of the largest aquaculture facility on this side of Buzzards Bay.***

Fairhaven is home to Taylor Seafood, an aquaculture business specializing in the off-bottom culture of bay scallops. Taylor chose Fairhaven because of its protected coastline, a necessity given the type of aquaculture it pursues. By the owner's own description, Taylor runs the only commercially successful scallop aquaculture venture in Massachusetts. Taylor ships its scallops nationally and even internationally. During the summer, employment at Taylor peaks at around 25; however, the business maintains 10 full-time people year round. Taylor has about 35 acres under cultivation in Fairhaven, as was approved in a ten-year lease from the Town. In addition, it has a lease on 100 acres from Mattapoisett in the same general vicinity.

Taylor is interested in expanding its business in Fairhaven to include a hatchery. It recently purchased a building near the current business in hopes of fitting the space for the hatchery. The expansion would likely create five year-round jobs.

➢ ***Despite the existing aquaculture presence, the Town has not decisively embraced aquaculture.***

It does not appear that Fairhaven shares the regional enthusiasm about the promotion of aquaculture. While the informal survey of public opinion indicated strong resident support for the expansion of aquaculture in the Town, the community reaction to more concrete projects has been mixed. Although Taylor is well established in the Town, the shellfish constable does not believe that there are many other areas where private aquaculture could be granted without conflicting with other water uses. Other Fairhaven residents have had their requests to set up an aquaculture businesses turned down by the Town.

Taylor's relationship with the Town has not been smooth. Concerns about the conduct of his employees, the location where he dries his nets, and the maintenance of his buoys marking his protected acreage have all been the topic of citizen grievances.

Separate from any concrete grievance, the concept of fish farming runs counter to the beliefs held by some residents. The maritime culture of Fairhaven has instilled in many the feeling that the ocean is the last wild frontier. It can not be owned or tamed by anyone. Aquaculture runs contrary to that principle and has generated substantial hostility among a certain segment of the population. Taylor tells stories of boaters jeering at him and people intentionally vandalizing his property simply because they despise the concept. Given community reaction to Taylor Seafood, the businessman can not be assured that the permit to farm his existing acreage will be renewed.